

## NON-SPECIFIC REACTIONS TO THE QUANTITATIVE FLUORESCENT ANTIBODY TEST (FTA) IN THE ELDERLY\*.

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Recently, Carr, Becker, and Carpenter (1966) published evidence indicating that biological false positive reactions to reagin tests, as judged primarily by negative results to the treponemal immobilization test, occurred more frequently in elderly patients than in the population as a whole. Although some aspects of this work have been justifiably criticized by Wuepper and Tuffanelli (1966), the main conclusion cannot be ignored when the results of serological tests in elderly patients lacking clinical and historical evidence of syphilis are interpreted. In a recent investigation we have shown that false positive reactions to quantitative fluorescent treponemal antibody tests (FTA) will also occur more frequently in elderly patients than in the general population.

### Material and Methods

Test sera for this study were obtained from 371 patients who showed no clinical or historical evidence of syphilis and whose sera gave negative results to reagin tests and negative results to the FTA-200 test. Standard serological tests (Kolmer, MKR, and VDRL) were performed on all sera, and in addition all sera were examined by quantitative FTA tests at the following dilutions: 1 in 5, 1 in 10, 1 in 50, 1 in 100, 1 in 150, 1 in 200. The treponemal immobilization test was carried out on 68 sera all of which gave negative results. Positive results to quantitative FTA testing are analysed with regard to age in the Table.

Examination by the  $\chi^2$  method of the results obtained in tests at a serum dilution of 1 in 10 showed that the aggregation of positive reactions in the older age groups was highly unlikely to have occurred by chance ( $\chi^2 = 15.4134$ ;  $P < 0.05$ ).

29 of those sera giving positive results to quantitative FTA tests were then examined by the FTA absorption test in which Reiter treponemes were used to remove

TABLE  
RESULTS OF QUANTITATIVE FTA TESTS ON 371 SERA

Age Group (yrs)	Number Tested	Percentage Positive to FTA Test at Serum Dilutions		
		1 in 10	1 in 50	1 in 100
1-5	17	Nil	Nil	Nil
6-10	76	6.6	Nil	Nil
11-20	110	13.6	2.7	Nil
21-30	48	16.6	10.5	2.0
31-40	58	18.9	8.7	1.7
41 and Over	62	29.0	11.2	4.8

non-specific group antibodies (Hunter, 1964); all sera of the sample gave negative results indicating that the reactions were non-specific.

### Discussion

It became evident soon after the introduction of the fluorescent treponemal antibody test that this highly sensitive test could produce non-specific positive reactions in non-syphilitic sera examined at low dilutions (Knox, Short, Wende, and Glicksman, 1966). It has been suggested that syphilitic sera contain two separate antibodies which are reactive with *Treponema pallidum* in the FTA test; one is type-specific and the other is group-specific, reactive with other treponemes (*T. microdentium*, *T. zuelze-rae*, *T. reiteri*) in addition to *T. pallidum* (Deacon and Hunter, 1962; Király, Jobbágy, and Mecher,

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1965). In normal sera, group-specific antibodies can give weak positive reactions to the FTA test (Niel and Fribourg-Blanc, 1962), it being supposed that these small amounts of group antibodies are produced by commonly occurring treponemes to which a non-syphilitic individual has been exposed. A serum dilution of 1 in 200 has been generally chosen as a level at which most of these non-syphilitic reactions will be eliminated.

Considering the predominance of non-specific positive FTA results caused by group antibodies in the older age groups of non-syphilitic patients, there are observations by Wilkinson and Rayner (1966) which suggest that a similar age-related distribution of group antibodies may also be found in the sera of syphilitic patients. These authors found that in cases of late and latent syphilis (by presumption, older patients) the titre of specific antibody was usually only a quarter or less of the titre of that found before absorption of group antibody, whereas in cases of primary syphilis (by presumption, younger patients) the specific antibody predominated. Niel and Fribourg-Blanc (1964) preferred to regard positive results to FTA tests at dilutions between 1 in 50 and 1 in 200 as being specific when they found such results in TPI-negative sera taken from elderly patients with syphilis. It is also our experience that conflicting FTA results are found to occur mostly in elderly syphilitic patients. However, in view of our findings, it is doubtful whether such positive FTA results should be considered as being specific when they are found in patients in that age group at which a higher amount of non-specific antibody is normally to be demonstrated. These low-titre positive results in the FTA tests have to be interpreted very carefully with regard to their specificity, particularly in cases of long-standing syphilis when other serological tests have given negative results. It seems reasonable to assume that the opportunities for exposure to group-specific antigens increase with the duration of life and that consequently non-specific antibodies will also increase in older patients as was demonstrated in this study; non-specific positive FTA reactions in the higher dilutions of serum could be demonstrated only in elderly persons.

### Summary

371 non-syphilitic sera were examined by the FTA test at low serum dilutions; positive reactions

were found to occur maximally on testing at a serum dilution of 1 to 10. These positive reactions were shown to be due to the presence of group antibodies, when negative results were later obtained on testing with the FTA absorption procedure. It was also found that the proportion of these false positive reactions increased progressively with increasing age. Attention is drawn to the difficulty in interpreting positive results to the FTA test when the patient has reached the age at which a larger amount of group antibody is normally to be demonstrated.

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### Les réactions non-spécifiques au test quantitatif fluorescent de l'anticorps (FTA) chez les vieillards

#### RÉSUMÉ

371 sérums non-syphilitiques ont été soumis au test FTA à de faibles dilutions de sérum; des réactions positives maxima ont été trouvées à une dilution au dixième. Il a été démontré que ces réactions positives étaient dues à la présence d'anticorps de groupe, quand des résultats négatifs avaient été obtenus plus tard en faisant le test FTA absorbant. Il a aussi été démontré que la proportion de ces réactions pseudo-positives augmentait progressivement dans chacun des groupes d'âge formées des plus âgés. L'attention est attirée vers la difficulté d'interpréter les résultats positifs au test FTA quand le malade avait atteint l'âge auquel une plus grande quantité de l'anticorps de groupe est normalement démontrée.